

Operational Radiation Safety

Supplement to **HEALTH
PHYSICS** VOL. 81, NO. 5 NOVEMBER 2001
THE RADIATION SAFETY JOURNAL



The Official Journal of
the Health Physics Society



www.health-physics.com



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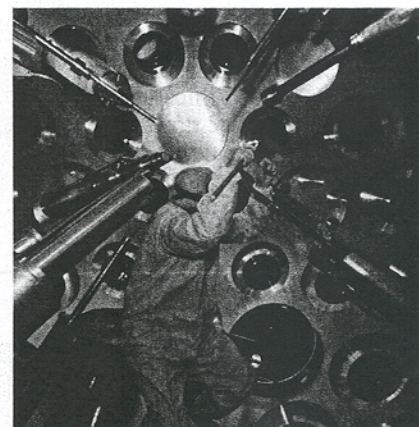
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ON THE COVER →

Hydrogen fusion research raises a number of radiological concerns. Here is a view of the target chamber. See article by Karam and Pien on page S90 for more information.

There is now a way to get rid of greater than Class C transuranic sealed sources ($>100 \text{ nCi g}^{-1}$).

Transuranic Sealed Source Recovery Project

J. Andrew Tompkins and Michael W. Pearson*

Abstract: If you have transuranic sealed sources (^{239}Pu , ^{238}Pu , or ^{241}Am) that have no potential for recycle or commercial disposal, the Off Site Source Recovery Project at LANL can assist in recovering the sealed sources from your facility to a DOE storage site. *Health Phys.* 81(Supplement 2):S59–S61; 2001

Key words: operational topic; recovery; waste, low-level; radiation protection

INTRODUCTION

Since 1985 and the passage of Public Law 99-240 (Low-Level Radioactive Waste Policy Amendments Act), the U.S. Department of Energy has had responsibility for disposal of Greater Than Class C (GTCC) low-level waste in the United States. DOE has established the Off-site Source Recovery Project (OSRP) at Los Alamos National Laboratory (LANL) with the primary mission of accelerating retrieval and storage of actinide bearing sealed sources, thus reducing risk to public health and safety, consistent with LANL's mission of reducing global nuclear danger.

HISTORY

In FY-1999, DOE Albuquerque created the OSR Project as a single

focal point within DOE for recovery, storage and eventual disposal of all off-site transuranic sealed sources. In this context, off-site includes sealed sources that are not already being managed by a DOE site. The OSR Project recovers and manages unwanted radioactive sealed sources from the public and private sector that are Greater than Class C, have no current disposal pathway and meet any of the following criteria:

- present a risk to public health and safety;
- are a DOE responsibility under Public Law 99-240; or
- are DOE-owned.

OBJECTIVES

The current operational objectives of the OSR Project are to decrease the time required to respond to emergency retrievals; reduce risk to public health and safety through accelerated retrieval and management of sources currently identified as excess and unwanted; investigate and provide recommendations for disposal of eligible materials; and decrease programmatic life-cycle costs.

PROBLEMS

Approvals to work

Start-up and operation of a new activity at a DOE facility is a very highly structured and regulated process. Requirements to be satisfied include:

- DOE level requirements such as NEPA approvals, safeguards issues associated with the security of special nuclear materials, DOE programmatic approvals and others;
- Institutional requirements designed to ensure that new activities can be incorporated without sacrificing the ability to complete existing missions;
- Facility level requirements—authorization basis issues ensuring that work can be performed safely within a given facility.

Packaging and transportation

Satisfying these requirements is in addition to, but very closely related to, identifying operational methods or plans that ensure compliance with regulatory requirements affecting transportation of sources to LANL.

For example, the OSR Project selected a packaging standard designed to:

- Provide multifunction capabilities as a Type A shipping container, a DOE site approved storage container, and a disposal container;
- Minimize source handling requirements during repackaging



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activities, thus minimizing both worker dose and the potential for material handling accidents; and

- Maximize packaging efficiency, thus reducing costs to taxpayers. The container selected for packaging is the pipe overpack component container, a 55-gallon drum based, pipe component overpack (see Fig. 1).
- Additional packaging issues involved the transportation of sources for which normal form quantity limits precluded cost effective transportation. This, plus concerns over potentially "leaking sources," was addressed by creating a family of field sealable special form containers for packaging problematic and unknown sources (Fig. 2).

CHARACTERIZATION

Identification of all pertinent data on excess sealed sources is a necessity and yet is virtually impossible. Pertinent data includes owner, location, regulator, on-site capability, etc. . . . and also who manufactured it, when, what is the isotopic composition, what are the inorganic constituents, what is the physical construction of the source, what is the uncertainty on the nominal activity value, etc. . . . ? We need data not only sufficiently detailed to recover and store a source, but also to eventually dispose of it in a US Nuclear Regulatory Commission (NRC) licensed facility. To facilitate both needs, a database of sealed source infor-

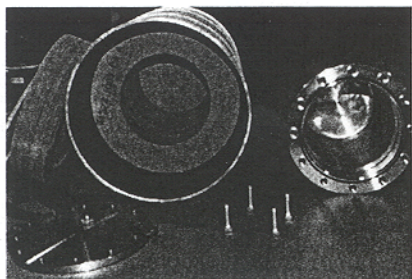


Figure 1. Standard pipe overpack component container.



Figure 2. Special form capsule.

mation has been created. The database was a badly needed resource that brings the known information about sealed sources together in one place. This database format filled the gap left by the unresolved disposition of so many sealed sources resulting from the Atoms for Peace Program and the beneficial use promotion of radioactive materials. One of the great weaknesses of these programs was the lack of permanent records on sealed source production.

You cannot identify or collect material if you do not know who has it. It is difficult to even scope the size of a project without solid numbers on the amount of material to be disposed of. Neither the AEC nor the NRC (until very recently) required manufacturers to identify models, types, serial number ranges, or nominal activity content of every source produced in a permanent record. Every time a major source manufacturer went out of business, part of the pertinent database went with it. As a consequence, only the major source manufacturers still in business have records of sealed sources sold in the U.S. Even the NRC and Agreement states cannot yet go to a single integrated database and find the 18,000 sealed sources expected to be excess by 2006. Currently, the LANL sealed source database is the only government owned database that actually attempts to quantify the amount of

material that is excess at the individual sealed source level. This is also why companies and universities holding sealed sources are encouraged to register all of their transuranic sealed sources on the LANL database and to initiate, at that time, efforts to obtain pertinent documentation allowing compliant transportation, storage, and disposal.

RECENT ACCOMPLISHMENTS AND GOALS

From 1998–2000 the OSR Project accepted about 100 sealed sources. In FY-2001 a determination was made that the National Environmental Policy Act requirements had been met for storage of transuranic sealed sources at LANL, allowing the OSR Project to begin retrieving and storing ^{238}Pu stores at LANL. A collection program for approximately 1,600 ^{238}Pu powered pacemakers (Fig. 3), pacemaker batteries, and other heat sources was immediately initiated for FY-2001. By the end of March 2001, the bulk of these materials will be stored at LANL.

The project anticipates final approvals affecting ^{241}Am and ^{239}Pu collection and storage at LANL in March 2001. The current FY-2001 programmatic milestone for the OSR Project is to recover 2,600 sealed sources, an order of magnitude increase in overall DOE acceptance of sealed



Figure 3. ^{238}Pu pacemakers (typical).

sources, and will mark the beginning of large scale risk reduction from the national backlog of thousands of excess sealed sources.

If your site possesses transuranic sealed sources that are now excess and cannot be commercially dis-

posed of ($>100 \text{ nCi g}^{-1}$), and you want to get rid of them:

- access the OSR Project web site and on-line registration system at <http://osrp.lanl.gov/>; and
- provide the information requested to add your sources to our database, or call the OSR

Project Operations Coordinator at 505-667-6701.

REFERENCE

The Off-site Source Recovery Project at Los Alamos, Report No. LA-UR-99-6218, Los Alamos National Laboratory, August, 1998.